



**PBPower**

303SecondStreet,Suite700North  
SanFrancisco,CA94107  
415-281-8700  
Fax:415-281-8707

## CalculationCoverSheet

**project:** CosumnesPowerPlant      **jobno.:** 13578A      **discipline:** Civil(M)  
**subject:** CrestedWeirDesign      **calculationno.:** C-2  
**originator:** EMorrisMcClung      **date:** 4/24/02      **fileno.:**  
**checker:**      **date:**      **Sheet1ofSheets3\_\_**

### PurposeofCalculation

Developtypicalpondembankmentdesignandcrestedweirdesign.Determineoutflowpipesize.

### SummaryofResultsandConclusionsStartsinSheetNo.

### SourcesofDesignCriteria

### SourcesofFormulaandReferences:

### RecordofIssues

No.	Description	By	Date	Checked	Date	Approved	Date	Date Filed
PreliminaryCalculation		x	CommittedPreliminaryDesignCalculation					
SupersededCalculation			FinalCalculation					



# PARSONS BRINCKERHOFF COMPUTATION SHEET

Page 2 of 3

Made by Sum

Date 4/24/02

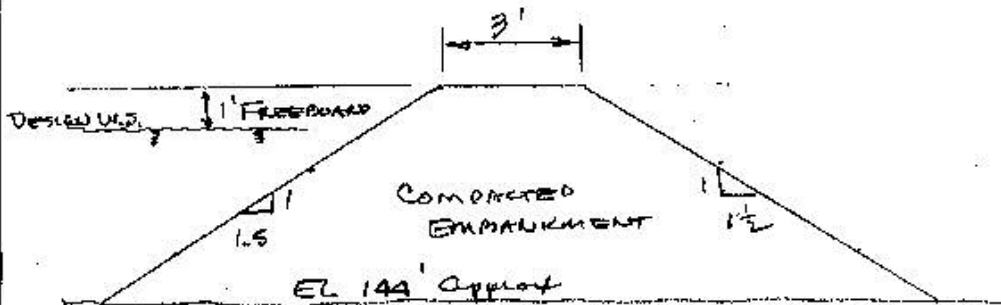
Checked by \_\_\_\_\_

Date \_\_\_\_\_

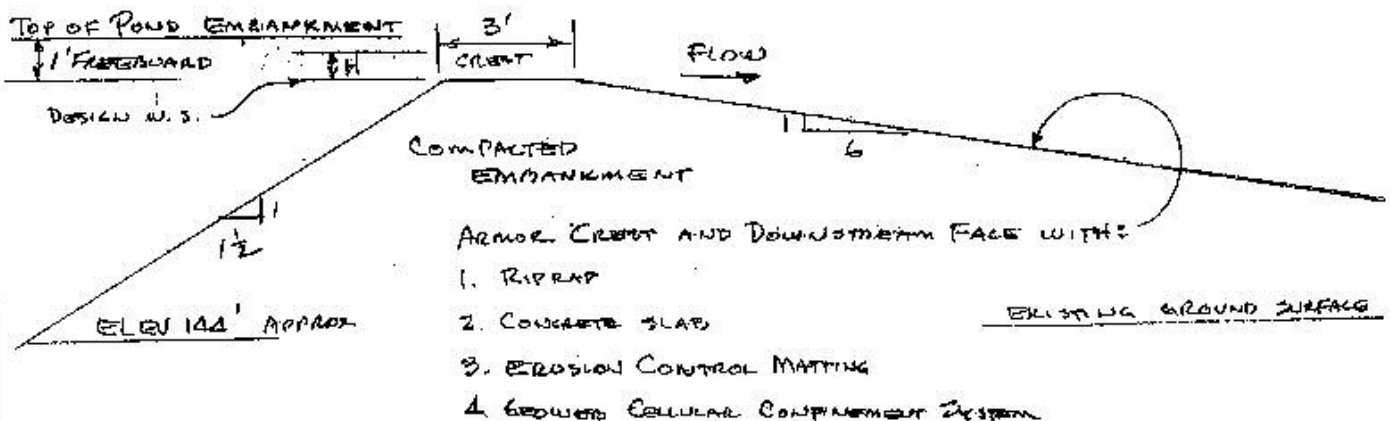
Subject COSUMNES POWER PLANT  
STORMWATER DETENTION POND

## ASSUMES:

1. DISCHARGES UP TO 0.83 CFS WILL FLOW OUT OF THE DETENTION POND THROUGH A PIPE.
2. DISCHARGES <sup>GREATER THAN</sup> 0.83 CFS OR <sup>A VOLUME OF</sup> 113,300 FT<sup>3</sup> WILL FLOW OUT OF THE DETENTION POND OVER A BROAD CRESTED WEIR.
3. DETENTION POND FREEBOARD WILL BE 1 FOOT.
4. SUGGESTED MINIMUM SECTION OF DETENTION POND EMBANKMENT.



5. SUGGESTED BROAD CRESTED WEIR SECTION.





# **PARSONS BRINCKERHOFF COMPUTATION SHEET**

Page 3 of 3

Made by Sam

Date 5/2/02

Checked by \_\_\_\_\_

Date \_\_\_\_\_

Subject SMUD - COSUMES POWER PLANT  
STORMWATER DETENTION POND  
OUTLET PIPE SIZE

Pipe Diameter	A = Pipe Area "²"	H=1'	H=2'	H=3'	H=4'	Q cfs
		$\sqrt[2]{2gH}$	$\sqrt[2]{2gH}$	$\sqrt[2]{2gH}$	$\sqrt[2]{2gH}$	
8"	0.3491	8.02	11.35	13.90	16.05	4.03
6"	0.1963	8.02	11.35	13.90	16.05	2.03
5"	0.1364	8.02	11.35	13.90	16.05	1.36
4"	0.0873	8.02	11.35	13.90	16.05	0.83
						0.78

1) Table 33, King's Handbook of Hydraulics

Analysis for concrete pipe culvert, beveled-lip entrance,  
both ends submerged.

$$Q = CA\sqrt{2gH}$$

Conclusion: To limit  
discharge from detention pond  
to 0.83 cfs a 4" to 5" pipe is  
required depending on H.

